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ABSTRACT

The development of higher education in China since the founding of the People's Republic is discussed, along with higher education reforms to meet the needs of socialist modernization. The reorganization of higher education, which was largely influenced by the Soviet model, is assessed, including experiences with engineering education. Efforts to increase study of the humanities and social sciences, including management, have been undertaken. Short-cycle (2-3 year courses) and two-year vocational universities are being promoted. Additional developments concern unified national college entrance examinations, greater autonomy in university decision making, and expanding international exchanges. Data are provided on: undergraduate and graduate enrollments by field of study; the number of institutions, total enrollments, new entrants, graduates, teachers and staff, 1947-1983; adult student enrollments and graduates by year, 1949-1983; the total state budget, expenditures for higher education and general education, and the average expenditure per college student, 1950-1983. Adult education enrollments include correspondence and evening schools, radio and television universities, and inservice courses. (SW)

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ON SOME VITAL ISSUES IN THE DEVELOPMENT AND REFORM OF HIGHER EDUCATION IN THE PEOPLE'S REPUBLIC OF CHINA

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SUMMARY. This paper first gives an overview of the development of higher education in China since the founding of the People's Republic and then concentrates on its current trends of development, especially some of the vital issues relating to educational reform which aims at making her system of higher education better fitted to the needs of her programme of socialist modernization.

I. A BRIEF STATISTICAL OVERVIEW OF THE DEVELOPMENT OF HIGHER EDUCATION IN THE PEOPLE'S REPUBLIC OF CHINA

1.1 Undergraduate Education

In 1949, there were only 205 regular higher educational institutions in the whole of China, with a total enrolment of 116,504 students. Their number reached 434 in 1965 with a total enrolment of 674,436. As a direct consequence of the disruption caused by the Cultural Revolution, their number dwindled to 328 in 1971 with the total enrolment shrinking to a mere 83,400. After the downfall of the Gang of Four, China's higher educational system has been gradually rehabilitated and steadily developing again. By the end of 1983, the number of her universities and colleges reached 805, with a total enrolment of 1,207,000, almost doubling that of 1977. Table 1 (page 2) shows the essential statistics for some selected years.

Table 2 (page 2) shows the percentage breakdown of undergraduate enrolment by field of study. From the information given it can be easily discerned that the humanities and social sciences have been neglected for quite a long time. Only recently vigorous steps have been taken to remedy this situation by enrolling more students in these fields.

1.2 Postgraduate Education

In comparison with the scale of undergraduate education, the scale of postgraduate education in China is too small to meet the needs of the country for high-level professional manpower with ad-

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Table 1. Total Number of Institutions, Total Enrolment, Total Number of New Entrants and Graduates for Selected Years 1949--1983

Year	1949	1952	1953	1958	1965	1971	1975	1977	1978	1979	1980	1981	1982	1983
	Number of students in '000													
Number of Institutions	205	201	181	791	434	328	387	404	598	633	675	704	715	805
Total enrolment	117	191	212	660	674	83	501	625	856	1,020	1,144	1,280	1,154	1,207
Total No. of New Entrants	31	79	82	266	164	42	191	273	402	275	281	279	315	391
Total No. of Graduates	21	32	48	72	186	61	119	194	165	85	147	140	455	355

Table 2 Percentage Breakdown of Undergraduate Enrolment by Field of Study

Year	Total	Engineering	Agriculture	Forestry	Medicine and Pharmacy	Teacher Education	Humanities	Natural Sciences	Finance and Economy	Politics and Law	Physical Culture & Sports	Art
1949	100	26.0	8.4	0.5	13.1	10.3	10.2	6.0	16.6	6.3	0.2	2.4
1952	100	34.8	6.9	1.1	13.0	16.5	7.1	5.1	11.5	2.0	0.2	1.9
1965	100	43.8	7.9	1.5	12.3	14.0	6.8	9.2	2.7	0.6	0.6	0.6
1977	100	33.4	8.6	1.1	15.0	26.4	5.6	6.7	1.3	0.1	1.0	0.8
1978	100	33.6	6.3	0.9	13.2	29.2	5.4	7.5	2.1	0.2	1.0	0.6
1983	100	34.7	5.7	1.1	11.6	26.0	5.6	6.6	5.9	1.5	0.8	0.5

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vanced degrees. Yet even prior to the onset of the Cultural Revolution, "leftist" mistakes prevented us from vigorously developing postgraduate training in our higher educational and research institutions. University teachers had to be recruited mostly from graduates without any exposure to advanced training. Our educational and research undertakings suffered a great deal under these circumstances. Postgraduate education had a very modest beginning during the early fifties and the enrolment of postgraduate students in our universities and colleges reached 6,130 in 1962, the highest figure reached before the Cultural Revolution and then gradually dwindled to 3,409 in 1966 and to zero in 1969. In the year 1978 a new start was made, with a total enrolment of 8,306 students. It grew to 17,728 in 1980, 21,284 in 1982, and 30,559 in 1983. From 1978 to 1983 the cumulative intake of postgraduate students was 52,145 and the total number of output was 19,462. Table 3 shows the intake of postgraduates by discipline and the percentage distribution.

Table 3 Intake of Master Degree Postgraduate Students for 1983
(including those admitted to research institutes)

Philosophy	226	1.5%
Economics	672	4.4%
Law	442	2.9%
Teacher Education	150	1.0%
Literature	690	4.6%
History	326	2.2%
Natural Sciences	3,283	21.7%
Engineering	6,946	45.9%
Agriculture	845	5.6%
Medicine	1,555	10.2%
Grand Total	15,134	100

Of the grand total 15,134, 12,674 or 83.7% are enrolled in universities and colleges. Altogether about 350 higher educational institutions and over 300 research institutes are involved in the training of postgraduates.

There were two abortive efforts to institute the academic degrees in the mid-fifties and early sixties. Serious work on this important issue was resumed in february 1979 under the direct guidance of Jiang Nanxiang, then Minister of Education. The first Academic Degree Statute ever instituted in the People's Republic of China was promulgated in February 1980 and took effect on January 1, 1981.

By January 1984, 196 units in higher educational and research institutions have been authorized by the State Council through its Academic Degree Committee to offer doctoral programmes and to award doctorates, with a total of 1,128 separate programmes, and 1,756 professors and senior scientists have been named as supervisors of doctoral work; and 425 units have been authorized to offer master degree programmes, with a total of 4,237 separate programmes. By the end of 1983, 29 domestic doctorates and 18,143 master's degrees have been awarded.

1.3 Higher Education for Adults

The Chinese Government has always paid great attention to the development of adult education. However, statistics relating to adult aducation are incomplete and much less reliable than the statistics given for the regular education system. Therefore the enrolment figures and the numbers of graduates given in Table 4 must be interpreted with caution. According to the statistics of 1983, the enrolment for higher adult education was 1,128,000 which includes enrolment in correspondence and evening schools, radio and TV universities as well as enrolment in much shorter courses for the in-service training of secondary teachers.

Of various forms of adult education, correspondence education has had the longest history. The correspondence education divisions attached to many teachers colleges have contributed much to the upgrading of seconary teachers in service.

The Central Radio and TV University was jointly established by the Ministry of Education and the Central Administration for Broadcasting (now succeeded by the Ministry of Radio and Television). It was formally inaugurated in February 1979 after a year's preparation. Then 28 provincial radio and TV universities were set up in quick succession. These 29 institutions form a network that administers distance teaching by combining the advantages of radio and TV broadcasting and guided study of printed materials, sometimes supplemented by correspondence teaching and face-to-face tutorials. The Central Radio and TV University has enrolled nearly 1.2 million registered students since its founding. It offers now a variety of courses catering to different needs, including Chinese, English, physics, electronics, basic mechanical engineering, economics, and management science.

A recent innovation in the realm of adult education is the acquirement of higher education qualifications through self-study examination. In 1981 the Ministry of Education issued the "Regulations Regarding Higher-Education-Through-Self-Study Examinations", which provides

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Table 4 Enrolment of Higher Educational Institutions for Adults and Number of Graduates*

in '000

Year	Enrolment	No. of Grduates	Year	Enrolment	No. of Grad.
1949	0.1	--	1972	17	4
1950	0.4	--	1973	146	6
1951	1.6	--	1974	214	6
1952	4.1	--	1975	729	38
1953	10	1.7	1976	2,629**	357
1954	13	2.4	1977	1,739	620
1955	16	3.0	1978	1,408	510
1956	64	1.3	1979	1,722	321
1957	76	3.1	1980	1,554	336
1958	150	5	1981	1,346	315
1959	300	4	1982	1,173	425
1960	793	8	1983	1,128	235
1961	410	18			
1962	404	36			
1963	418	33			
1964	445	43			
1965	413	42			

* The numbers of graduates include students who finished one or two courses only.

** The highly inflated figures for 1976 and several succeeding years reflect the proliferation of July 21 universities during those years.

* * *

that all Chinese citizens, irrespective of age and previous education, can take part in this examination, and, if requirements are met, be recognized as equivalents of college graduates.

By the end of 1983, committees for higher-education-through-self-study examinations have been set up in 22 provinces and municipalities---Beijing, Tianjin, Shanghai and Liaoning being the pioneers. The Ministry of Education has established a national steering committee for higher-education-through-self-study examinations. In the latter half of 1983, 270,000 self-learners sat for examinations administered by this system. These examinations involved 136 courses relating to 26 specialities. A significant proportion of the examinees acquired certificates (200,000 man-courses out of 430,000 man-courses were regarded as successful).

1.4 Additional Statistical Information

Table 5 shows the Basic Statistics of Regular Higher Educational Institutions and Table 6 shows Public Expenditure on Education for 1950-1982. They are all taken from a forthcoming publication entitled "Achievement of Education in China -- Statistics 1949-1983", a bilingual edition published by the People's Education Press.

The data of public expenditure on education do not include the outlays on capital investment. In recent years a vast amount of resources has been allocated to capital investment in new buildings so as to keep pace with the expansion of higher education. In the six years 1978-1983 5,473 million yuan were spent on capital investment, an average of 912 million yuan per year.

II. RECENT TRENDS IN THE DEVELOPMENT OF HIGHER EDUCATION

2.1 Readjustment of the Proportion of Various Sectors of Higher Education

Table 2 shows the percentage breakdown of undergraduate students by field of study. It can be readily seen that the proportion of students enrolled in the humanities and social sciences (including management) is too small to satisfy the needs of the national economy. Steps have to be taken to expand the training of students in these fields. Since engineering students are relatively abundant we are considering the possibility and expediency of diverting a significant portion of engineering graduates to undergo further training in the management science so as to close the gap as soon as possible.

Within each major field there also exist imbalances between different sub-fields that must be corrected. For example, within engineering, various branches of light industry should be given greater attention. Within medicine too few dentists were trained to meet the needs of the health service.

2.2 To Speed up the Development of Short-cycle Higher Education

If we analyze the composition of tertiary education enrolment for 1983 (1,206,823) by level, we find that 929,319 or 77% are enrolled in normal or 4-5 year courses and 217,504 or 23% in short cycle or 2-3 year courses. A sizable portion of the latter are enrolled in teacher training programmes, while in engineering and agriculture, short-cycle enrolments are relatively insignificant, as exemplified by the following data. (see page 9)

Table 5 Basic Statistics of Regular Higher Educational Institutions

Year	Number of Institution	Number of Students			Number of Teachers, Staff and Workers	
		Graduates	New Entrants	Total Enrolment	Total	of which: Full-time Teachers
1947	207	25,098	---	154,612	30,303	16,940
1949	205	21,353	30,573	116,504	45,983	16,059
1950	193	17,607	58,330	137,470	48,170	17,319
1951	206	18,712	51,689	153,402	65,064	22,960
1952	201	32,002	78,865	191,147	72,287	27,089
1953	181	48,091	81,544	212,181	84,111	33,630
1954	188	47,069	92,280	252,978	92,221	38,835
1955	194	54,466	97,797	287,653	100,072	42,066
1956	227	63,214	184,632	403,176	139,713	58,346
1957	229	56,180	105,581	441,181	155,281	70,018
1958	791	72,424	265,553	659,627	192,485	84,993
1959	841	69,839	274,143	811,947	236,121	99,657
1960	1,289	136,138	323,161	961,623	333,550	139,142
1961	845	151,283	169,047	947,166	415,859	158,736
1962	610	177,255	106,777	829,699	335,041	144,371
1963	407	198,754	132,820	750,118	316,103	137,925
1964	419	204,499	147,037	685,314	311,967	135,176
1965	434	185,521	164,212	674,436	332,579	138,116
1966	434	140,670		533,766	332,049	139,126
1967	434	124,836		408,930	332,267	138,901
1968	434	150,194		258,736	341,350	143,181
1969	434	150,119		108,617	335,447	137,272
1970	434	102,672		47,815	312,338	128,617
1971	328	5,945	42,420	83,400	328,610	138,060
1972	331	16,961	133,553	193,719	347,466	130,175
1973	345	30,057	149,960	313,645	369,053	138,931
1974	378	43,282	165,084	429,981	389,807	148,401
1975	387	118,955	190,779	500,993	407,521	155,723
1976	392	149,154	217,048	564,715	439,839	167,409
1977	404	194,426	272,971	625,319	471,842	186,489
1978	598	164,581	401,521	856,322	518,440	106,254
1979	633	85,085	275,099	1,019,950	573,534	236,637
1980	675	146,635	281,230	1,143,712	631,933	246,862
1981	704	139,640	278,777	1,279,472	666,339	249,876
1982	715	457,244	315,135	1,153,954	729,758	286,908
1983	805	335,344	390,800	1,206,823	763,374	302,919

in 100 M. Rmb Yuan

Year	Total State Budget	Public Expenditure on Education				Average Expenditure per college student in Rmb Yuan
		Total	Higher Education	General Education	Total expend. as % of st. budget	
1950	68.08	3.76				
1951	122.49	7.42				
1952	175.99	8.95	1.40	7.55	5.09	830
1953	220.12	12.80	2.27	10.53	5.81	1,070
1954	246.32	13.77	2.92	10.85	5.59	1,207
1955	249.29	14.08	3.01	11.07	5.23	1,081
1956	305.74	16.47	3.69	12.78	5.39	1,056
1957	304.21	19.52	4.21	15.31	6.42	958
1958	409.40	19.83	4.73	15.10	4.84	794
1959	552.86	24.09	6.88	17.21	4.36	880
1960	654.14	31.78	10.43	21.35	4.86	969
1961	367.02	26.78	7.25	19.53	7.30	735
1962	305.25	24.07	5.80	18.27	7.89	645
1963	339.63	24.91	5.82	19.09	7.33	740
1964	399.02	27.80	6.23	21.57	6.97	861
1965	466.33	29.12	6.31	22.81	6.24	918
1966	541.56	34.43	6.21	28.22	6.36	979
1967	441.85	32.70	5.23	27.47	7.40	1,279
1968	359.84	27.50			7.64	
1969	525.86	27.04			5.14	
1970	649.41	27.56			4.24	
1971	732.17	33.00	4.56	28.44	4.51	5,495*
1972	766.36	38.54	5.37	33.17	5.03	2,770
1973	809.28	42.07	6.16	35.91	5.20	2,541
1974	790.75	45.98	6.85	39.13	5.81	1,960
1975	820.88	48.26	7.16	41.10	5.88	1,567
1976	806.20	50.49	8.03	42.46	6.26	1,492
1977	843.53	53.04	8.26	44.78	6.29	1,648
1978	1,110,95	65.60	11.63	53.97	5.90	1,844
1979	1,273,94	76.96	16.40	60.56	6.05	1,744
1980	1,212,73	94.18	19.13	75.05	7.77	1,751
1981	1,114.97	102.48	22.28	80.20	9.19	1,751
1982	1,153.31	115.68	23.86	91.92	10.03	1,922
1983		127.85				

*The excessively high figures for 1971-1973 were the consequences of the disruption caused by the cultural revolution, when the enrolment dwindled to a small fraction of the total capacity.

Breakdown of Tertiary Education Enrolment by Level in Selected Fields

Duration of Study	Total	Engineering	Agriculture	Teacher Training
4-5 years	929,319	369,524	56,117	155,791
2-3 years	217,504	49,021	11,834	157,549

The consensus of opinion both inside and outside the academia is that short-cycle higher education should be vigorourly developed in such fields as engineering, agriculture, economics and law. A number of inquiries have been done over the years which show that there are many positions in each major field of employment which can be satisfactorily filled with people having had 2-3 years of training and that the skills of many graduates of the 4-5 year courses are underutilized. To raise the proportion of short-cycle students in the total college student population not only will increase the output of tertiary education but also effect greater economy in the operation of the educational enterprise. Similar inquiries made abroad also point to the same conclusion. For example, a recent Unesco publication entitled "Engineering technicians: some problems of nomenclature and classification" strongly advocates that there is a legitimate place for the senior technician or engineer-technician in the technical manpower which stands between university-level engineers and technicians and should be more practically oriented in his training than the university-level engineer.

By the way it is not out of place here to point out that the same reasoning applies to the imperative need for accelerating the development of specialized secondary education in China. Inadequate output of senior technicians and technicians leads to shortage of support personnel in various fields of human endeavour and the frustration of many college graduates whose skills are not fully utilized.

* * * *

Another development relating to this topic is the emergence of more than 50 short-cycle (usually two years) vocational universities in a number of large and medium-size cities during the past few years. They are referred to as 'polytechnics' in World Bank documents and their development has obtained financial aid from the World Bank. They have the following common features:

1) the courses offered are closely related to local needs for qualified manpower, including courses for training secretaries, accountants,

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etc.

2) Their students will not be assigned jobs by the state upon graduation and this policy really serves as an effective incentive to higher motivation in students' work.

3) The students are local residents and live at home, thus the schools need not provide dormitories for them. And quite a number of their instructional staff are drawn from local universities and colleges, working part-time. Both features serve to lower the cost of operation.

4) Since many of these schools are located in medium-size developing industrial centres, their establishment improves the geographical location of higher educational institutions.

By the end of 1983, 52 such short-cycle vocational universities have been set up, the 53rd one is now being set up in Yantai, a seaport on the northern part of the Shandong Peninsula.

2.3 New Departures in College Admissions

A system of unified national college entrance examinations was enforced in the early fifties and abolished during the Cultural Revolution and reinstituted in 1977. Generally speaking, this system has served the purpose of allocating the academically qualified secondary school graduates to various institutions according to their merits and aspirations. However, a number of its shortcomings have drawn sharp criticisms from various social circles. The more important ones are as follows:

1) The selection procedure overemphasizes the result of one set of examinations without taking account of the school records of the applicants. This may encourage rote-learning rather than creative and independent thinking, and therefore may have detrimental effects on teaching and learning in schools. The competition for college places has disrupted the normal and healthy functioning of school life, and school work has become excessively examination-oriented.

2) Many students made their decision regarding the selection of preferred institutions or specialities purely on the basis of better chances of being admitted rather than the perceived needs of society or personal aspirations and inclinations. Many kinds of jobs are deliberately avoided by school-leavers, including occupations in agriculture, forestry, mining, geological prospecting, and teaching. Even such disciplines as aeronautics, astronautics, and nuclear engineering, which could attract the best minds in the fifties, are no longer attractive now.

In January 1983, a national conference on college admissions

was convened in Kunming, Yunnan to discuss these burning issues. It was decided that teachers colleges and colleges of agriculture, forestry and medicine should lower their entrance requirements for rural applicants and those willing to work in rural areas after graduation. This decision is in line with an important document promulgated earlier in 1983 by the Central Committee of CCP concerning "Some Issues of Current Rural Economic Policies", which requires that higher educational institutions and specialized secondary schools which prepare personnel for the countryside should adopt a new method of admission and job assignement and pave the way for their graduates to settle in the countryside.

Lower examination standards will also be permitted for model workers with over 3 years of experience.

Rules for conducting medical examinations have been revised to remove the obstacles that prevent the admissions of physically handicapped candidates with high scholastic achievements and moral qualities.

Following are the guidelines for further reform in the college admission system. The reform should be:

1) conducive to the training of red and expert personnel fitting the needs of socialist modernization;

2) conducive to the healthy development, reform and raising the standards of secondary and primary education;

3) conducive to social stability and unity and the development of good social atmosphere;

4) conducive to the unobstructed flow of graduates to where their skills are badly needed, including rural areas, economically backward outlying regions, as well as medium and small-size enterprises.

2.4 Reform in Engineering Education

I have chosen this theme as an example to illustrate a case of dependence and interdependence between different educational systems. Before touching upon the main topic, a brief account of the large-scale reorganization of the higher educational system has to be given, so that my readers may understand the problems and issues to be discussed in their historical settings.

Before liberation, higher education in general and engineering education in particular, were largely influenced by American practice, with a few schools by other western countries (e.g. Tongji University in Shanghai largely followed German practice.). Between 1952 and 1953, a large-scale and wholesale reorganization of the higher educational system was undertaken, largely influenced by the

Soviet model. As a result of the reorganization, the number of comprehensive universities was reduced, and in them were left only the departments of the humanities, the social sciences and the natural sciences. Concomitantly a large number of independent colleges of engineering, agriculture, medicine, teacher training, etc. were set up to accomodate the greatly expanded student population. The courses or specialities offered were devised largely in accordance with the Soviet model with minor modifications. In the Ministry of Education itself there were a small number of Soviet advisers who played an important role in shaping the new educational framework to be set up. In the years to come a great number of Soviet experts were appointed to give lectures and guide the development of the newly established specialities, including the organization of teaching and research groups (教研组 , which is equivalent to the Russian word Кафедра, which in its turn is rendered into sub-department by some Americans), the construction and equipping of teaching laboratories, the drafting of essential documents for organizing instruction (curricula or teaching plans and syllabi or teaching programmes), and the training of young teachers. It must be added that between 1951-1965 8,424 Chinese students and scholars were sent to the Soviet Union to study, most of them enrolled in undergraduate courses, and 7,324 finished their studies with proper qualifications. These returned students also became a major factor in learning from the Soviet Union in all spheres of human endeavour, including engineering education.

Looking back on the experiences of learning from the Soviet Union, I think, the following lessons might be drawn, mainly in the light of experiences relating to engineering education.

1) The training capacity of the engineering schools has been greatly expanded. At present, in terms of undergraduate enrolment of engineering students, China ranks fourth after the Soviet Union, the United States and Japan in the world, and even higher in terms of annual output of graduates.

2) Many new specialities of engineering or technology were quickly set up.

3) Better integration of theory and practice was achieved in both teaching and learning. Students were required to have industrial practice for several times during their study, and this served to strengthen ties between industrial enterprises and engineering colleges. During the late fifties many diploma projects executed by the students were based on real problems.

In contradistinction to the positive gains mentioned above, however, there were some negative aspects that could not be overlooked--some connected with the inherent weaknesses of the Soviet system, some due to our own uncritical copying of foreign experiences, without adequate knowledge about how the system really functioned in the Soviet Union. The following problems are particularly worthy of note:

1) Overspecialization of engineering education. It seems to me that overspecialization in the Soviet Union was the combined outcome of several socio-economic factors prevailing during the late twenties and early thirties in its hectic programme of rapid industrialization, among which were:

(1) Compartmentalization of engineering education and the proliferation of narrowly specialized engineering schools under the direct jurisdiction of the industrial ministries. This could be traced back to earlier times. For example, in the early twenties the Moscow Mining Academy established in 1918 was split into six specialized institutes, each catering to the needs of a particular branch of industry: namely, coal mining, petroleum and natural gas, geological prospecting, peat, ferrous metallurgy, non-ferrous metallurgy. And this tendency became all the more intensified with the advent of the first Five-Year Plan. A similar development occurred in China in the early fifties, when her own First Five-Year Plan was launched, and ever since.

(2) The methodology or rationale adopted regarding manpower planning and forecasting had serious implications for determining the 'profile' of the specialists to be trained. The Central Planning Authorities (now called the State Planning Commission) of the Soviet Government has been responsible for the overall planning of the manpower needs of the country. A comprehensive list of existing (and some anticipated) occupations and a comprehensive list of existing industrial products and processes were prepared to guide planning in general, and these documents (called normative documents in the Soviet Union) influenced a great deal the list of specialities to be drawn up by the Ministry of Higher and Secondary Specialized Education or its predecessors) in consultation with The State Planning Commission. This methodology tends to accentuate the problem of overspecialization. For example, in the broad field of mechanical engineering, not only engineers have been trained separately for two categories:①manufacturing and fabrication,②design (and/or research & development), but also many specialities have

been organized along product or process lines, such as internal combustion engines, steam turbines, cranes and other material handling machines,etc. Specialities concerned with internal combustion engines are further subdivided into those used in the automotive industry, the agricutural machine-building industry, the aviation industry, and the shipbuilding industry. Similar practice exists in China.

2) Too much centralization of administrative decision at the highest level and too little autonomy granted to the grassroots institutions. This tends to enforce unwarranted uniformity in curricular matters (including curriculum, syllabi of individual courses, selection of textbooks) and teaching methods, as well as in organizational framework and financial matters. And this tends to be conservative in its outlook and leaves little initiative to the institutions and individual faculty members. This is particularly harmful in an age of rapid changes in the production spheres as well as in science and technology. The same problem exists in China and it was even more serious during the early fifties, when uniform curricula and syllabi were regarded as inviolable legal documents to be enforced with the utmost care. Later on we came to know that the leading institutions in the Soviet Union enjoy far greater freedom in curricular matters and in initiating reforms. Our own folly in sticking to uniform curricula and syllabi was largely due to our own ignorance.

3) The research potential of the higher educational institutions has been underutilized, because they are not equipped to do first-rate work and lack the necessary financial support from the state. Many of them were essentially teaching institutions for quite a long time, as evidenced by Soviet official statistics on the total volume of research performed by the sector of higher educational institutions, which stood at a level less than 40 million rubles in the mid-fifties. The Soviet pattern also has affected very much the organizational set-up and the distribution of research funds among various sectors--universities, research institutes under the jurisdiction of the U.S.S.R.Academy of Sciences and other Branch Academies, and research institutes of the industrial departments. The historical roots of the Soviet pattern was analyzed by Loren R. Graham in "The Development of Science Policy in the Soviet Union", a chapter in: Long, D./Wright, C. : Science Policies in Industrial Nations, New York, 1975. However, the situation of university re-

search in the Soviet Union has changed for the better since 1956, when it was decided that a number of so-called 'problem laboratories' and 'branch laboratories' be set up in the higher schools, and especially since the mid-sixties. The volume of research performed by the institutions of higher education increased from 214 million rubles in 1965 to 1.3 billion rubles in 1980 and to about 1.5 billion in 1983. However, the problem of maintaining a proper balance between basic research, applied research, and development has not been solved yet. The rate of increase for contract research is much higher than that for reseach financed by the state budget, a situation lamented by Yeliutin, the Soviet Minister of Higher Education, too (see p. 6, April 1980 issue of Вестник А. Н. СССР). Similar problems exist in China too.

By taking stock of the experiences of both the Soviet Union and China and learning from the experiences of other nations, we are now in a position to find the right road of advance.

Overspecialization in engineering education is being tackled in real earnest. In late June 1983, a national conference was called in Chengdu to discuss related issues with nearly 200 participants. Intense work on devising a new and workable list of engineering specialities was continued after the conference. By the time of writing the work is nearing completion. But it must be remembered that the legacy of overspecialization cannot be thrown away overnight. This is an important lesson to be learned. In the years to come any major reform in education must be handled with the utmost care.

2.5 Higher Educational Institutions Will Enjoy Greater Autonomy in Decision Making

During the past few years, at various educational conferences and in the press, much has been said on the imperative need for granting greater autonomy to the universities in decision making. This problem is complicated by the fact that many shackles and fetters derived from existing regulations were not the creation of the educational department, but the creation of the Ministry of Finance, the Ministry of Labour and Personnel, the State Planning Commission and other governmental agencies. Within an institution it is also necessary to extend decision-making powers to lower levels so as to attain high efficiency in management.

It is encouraging that several universities have been pioneers in probing ways to improve administration and to promote mobility

in their personnel and to improve the remuneration of their staff by their own earnings.

The three much publicized pioneers are Shanghai Jiaotong University, China University of Science and Technology and Beijing Technological University. Their experiences were highly commended in Premier Zhao's Report on the Work of the Government (Delivered at the Second Session of the Sixth National People's Congress on May 15, 1984). At the time of writing the Ministry of Education is convening a meeting at Shanghai, with participants from 18 universities and colleges to discuss ways to push forward the reform along this line. From the experiences so far gained and the dominant opinions heard, it seems obvious that the following issues will be dealt with:

1) To give individual institutions the power to enroll students beyond the state plan (condition permitting) by allowing them to sign agreement with other governmental agencies, enterprises and collective units. The instituions in question will be allowed to accept financial aids in capital investment and operating expenses.

2) To give the presidents, vice presidents (or directors, deputy directors) of schools exclusive power to select and appoint their subordinate staff, to determine the administrative structure of the school. They will be empowered to recruit teaching staff and other employees, and to remove incompetent personnel from their posts.

3) To give the institutions greater autonomy in the allocation of financial resourses. 60% of the President's or Director's Fund (built up through the school's own earnings) will be used for the improvement or construction of physical facilities, while 40% may be used for job subsidies, bonuses, collective welfare, and even reform in salaries and wages.

4) To give the institutions greater power in the allocation of capital investment, subject to the limit set by the approved overall plan.

5) To give the institutions a greater say in the job assignment of their graduates and to encourage direct link with units which are in need of their graduates.

2.6 Ever Expanding International Exchanges

Since the downfall of the Gang of Four, the Chinese Government has consistently followed a policy of being open to the outside world and encouraged scientific and cultural exchanges with foreign

countries.

1) Exchanges of students and scholars

Between 1978 and 1983, 18,500 Chinese students supported by the state have been sent abroad and since 1978 about 7,000 students have finished their study abroad and returned home, including visiting scholars, postgraduate students, trainees and personnel attending short-term courses.

World Bank loans, scholarships and fellowships awarded by foreign governments, private foundations and educational institutions, international agencies, etc., also serve to support many Chinese students and scholars abroad. In addition, by the end of 1983, self-supported students totalling over 7,000 have gone abroad.

On the whole Chinese students and scholars going abroad have earned good repute by their hard work and achievements.

Between 1978 and 1983 more than 6,000 foreign students from 102 countries were enrolled in over 50 Chinese universities and colleges. Their duration of study ranges from 2-5 years. Besides, in 1983 alone, over 3,500 foreign students from more than 20 countries were enrolled in short courses offered by Chinese institutions of higher learning.

2) Establishment of Direct Contact between Sister Institutions

By the end of 1983, over 100 Chinese institutions of higher learning have signed agreements with over 200 foreign institutions of higher learning. Such agreements have been instrumental in promoting exchanges of delegations, undergraduate and postgraduate students, visiting lecturers, publications, and the execution of joint research projects.

3) Exchange of official delegations

Between 1978 and 1983, 335 Chinese educational delegations were hosted by foreign governmental agencies and educational institutions, and the Chinese side received 449 foreign delegations in the meantime.

4) Attendence at international conferences

Between 1979 and 1983, 1,268 scientists and scholars (with double or multiple counts of those who might have gone abroad more than once) from institutions under the direct jurisdiction of MOE alone attended 561 international conferences.

5) To take active part in activities sponsored by Unesco and other international agencies.

6) To promote coperative research efforts

The Chinese Ministry of Education has been promoting joint research projects to be conducted by Chinese and American scientists

and joint seminars attended by scholars from both countries and sometimes from other countries too, through an official agreement with the National Science Foundation of the United States.

There are official agreements signed by the Ministry of Education with foreign organizations, such as the German Research Association , the Japan Society for the Promotion of Science, etc. But their scope of activities is still limited to exchange of scholars and not yet extended to the conduct of joint research projects or joint seminars.

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CONCLUDING REMARKS

Since China is a socialist country, the Chinese Communist Party and the Government have always stressed the importance of socialist orientation in guiding the development of education, science and culture. It is not out of place here to make reference to the general educational policy which is defined as "to enable everyone who receives an education to develop morally, intellecturally, and physically and become a worker with both socialist consciousness and culture, or in other words, a qualified person who is both red and expert." The integration of education and productive labour and the integration of intellectuals with workers and peasants are also essential components of the general educational policy. Deng Xiaoping recently stressed that education should be oriented to the needs of modernization and the future, and help nurture globally-minded citizens.(The original Chinese is 面向现代化,面向未来,面向世界) And his remarks have given impetus to very lively discussions among educational circles throughout the country. It is yet premature to expound on their full implications for educational development and reform in China. Anyway, I am sure, they will have very beneficial effects on promoting international exchanges and a healthy interdependence between different nations in their quest for a safer, better and brighter world--the central theme of the Vth World Congress of Comparative Education.

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Postscripts : In this paper I have drawn freely from my earlier writings: (1) "Education in China: The Past Five Years", a report prepared by me for Unesco on behalf of the Chinese Ministry of Education last August, and (2) "Higher Education in China: The Past Five Years", a paper presented at the Beijing International Conference on Science & Technology Policy and Research Management held

4-8 October, 1983.

The statistical information given here has been drawn from official sources. As mentioned earlier in the text, a publication entitled "Achievement of Education in China--Statistics 1949-1983", a bilingual edition (Chinese-English), will be forthcoming soon. The publisher is People's Education Press.

Following are several significant publications indispensable to researchers of higher education in China:

1) "The Chronicle of Education in the People's Republic of China, 1949-1982" (中华人民共和国教育大事记1949—1982) edited by the Central Institute for Educational Research and recently published by the Pedagogical Science Press, Beijing.

2) "Yearbook of Education in China" (中国教育年鉴), which covers the ground from 1949 to the end of 1981 or mid-1982, to be published soon by the China Encyclopedia Press.

3) "Directory of Chinese Higher Educational Institutions" (中国高等学校简介), which gives fairly complete description for each of 675 higher educational institutions as existed in October, 1980, including a brief history and courses offered, published by the Pedagogical Science Press in 1982.